

**EMBRYO TRANSFER: RECIPIENT PROTOCOLS FOR SYNCHRONIZATION,
TIMED EMBRYO TRANSFER, AND RESYNCHRONIZATION**



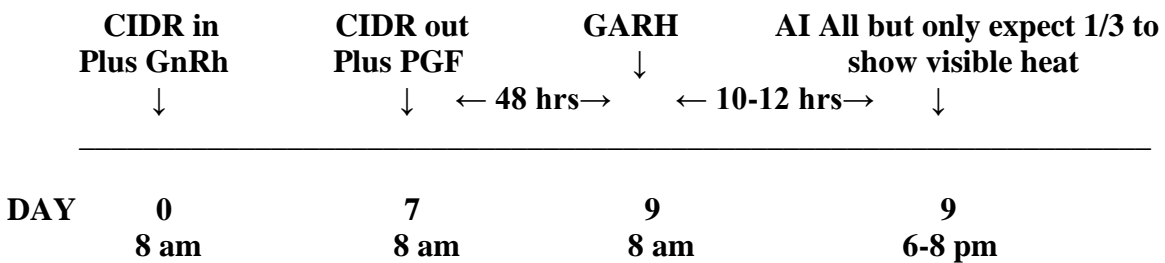
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Since the commercial availability of PGF2 alpha in the mid 1970s, estrous control in the bovine has been a reality. Even in those early days of the spinning “*Lutalyse Wheel*” for showing producers when to give PGF, DVM’s have been tinkering and tweaking protocols and became highly excitable with every new estrous control product that made it onto the market.

Today many acceptable systems are available for timed A.I., timed E.T., and resynchronization. I’ll only address those today which are most successful in my hands and most practical in our reproductive practice.

I. TIMED A.I./E.T. OVULATIONAL CONTROL



When recipients are watched for standing heat following synchronization, most producers record 80-85% of the number started. After culling for C.L.’s., we typically use only 75% of the total number of recipients which began the protocol. When we use timed E.T., we consider 100% to have been in heat at the time of the GnRh on day 9 (on the above schedule). Even after culling CL’s, we usually implant 90+% of the recipients which began the protocol. Pregnancy rates are slightly higher for the observed estrus over the timed estrus, but significantly more **total pregnancies** will result from the timed heat protocol. Timed E.T. protocols have proven most valuable on farms which have less available manpower for heat detection and/or lesser trained personnel.

TWEAK #1: For Timed A.I.

Whenever manpower is available and semen cost is negligible, we A.I. twice; once on the above protocol at 8 am on Day 9 when GnRh is given and a second A.I. 10-12 hours later. We’ve gained great benefits from this in herds which can do so.

TWEAK #2

Five day protocols which have been recently reported can be used in a pinch. CIDR’s are left in 5 days with PGF given at CIDR removal and

again 8-12 hours later. Watch for observed heats. We have no data for using 5 day **timed** heats for E.T.

II. RESYNCHRONIZATION FOR A.I. AND E.T.

A. FOR A.I.

	Estrus And AI	CIDR in No injections	CIDR out No injections	OBSERVE HEAT and A.I.
	↓	↓	↓	↓
DAY	0	16	20 ½	21 – 23

B. FOR E.T.

	Estrus	EMB implant	CIDR in <u>No inj.</u>	CIDR out <u>No. inj.</u>	Observe Heat	Implant Embryo into observed Heats and Preg. √
	↓	↓	↓	↓	↓	↓
DAY 0		7	17	26	27-29	35

For maximum efficiency of recipient herd and maximum no. of pregnancies in a window of time, recipient re-synchronization is a valuable tool for us. On most farms, we re-synch all recipients and collect all donors on a 28 day continuous schedule as long as it fits the producer's window of time.

Recipient resynchronization requires heat detection on those which previously received embryos, but a timely used CIDR prevents lost time in getting a 2nd embryo into a recipient which failed to conceive.

The protocol above calls for each recipient previously implanted on Day 7 to have a CIDR re-inserted with NO injections on Day 17. The CIDR may be left for 7-9 days (Day 24-26) depending upon your work schedule. Removal after 9 days (on Day 26) allows us to have heats on Day 28 and keeps us on a 28 day routine schedule for each farm. Leaving CIDR's in for 10 days results in many persistent follicles which do not ovulate when the CIDR is removed. When CIDR's are left 10 days, we reject 50% of the heats due to no C.L.

III. DONOR SCHEDULE WITH RESYNCHRONIZATION

Day 0	CIDR in
Day 2	GnRh

Day 4-7	FSH B.I.D.
Day 7	PGF B.I.D.
Day 9	AI a.m. and p.m.
Day 10	AI a.m.
Day 16	Collect/Transfer Embryos
Day 18	PGF B.I.D. to donors
Day 28	CIDR in to start next superovulation

IV. RECIPIENT CARE

None of the above works well without strict attention to recipient care. I'll briefly mention 4 areas that must be well managed: (1) Nutrition (2) Past Calving Status (3) Housing/Environment (4) Health and BioSecurity.

Recipient Care

Nutritionally, recipients need to be in good general body condition. If recipients are growing heifers or lactating cows, they should be gaining weight if possible, and on a high plane of nutrition. Obviously, good health is required for recipients to conceive. Even cattle in good body condition which are affected by pinkeye, parasites, warts, coughing, or diarrhea, have a very poor conception rate. Evaluate well the physical condition of recipients.

Post-partum history is important. Most cows are not suitable recipients at 50 days post-partum, but on some farms where strict sanitation is practiced at calving and a well-balanced ration is fed, they may be more fertile at 50 days than some other less well managed herds would be at 120 days. Well managed cattle have much faster uterine involution, much quicker return to estrus, and more ovarian structural development. Usually, the reproductive tract and ovaries "feel" like the outside of the cow "looks". A comfortable environment is crucial for both recipients and donors. In general, an uncomfortable animal is a low fertility animal. Discomfort may be due to muddy, wet loafing areas, extremely hot and cold temperatures, and improper cattle handling facilities and personnel. Extremely cold or hot temperatures near time of ovulation has proven to reduce fertility substantially. Stressful temperatures during the FSH schedule on donors causes a cortisol release in response to stress which blocks the effects of the FSH. Although heat stress seems to interfere greatly with fertilization rates in hot climates, investigators have shown that if recipients can be managed quietly and without stress, even in extremely high temperatures, they will produce acceptable conception rates when good quality embryos are implanted into them. (Dr. Marten Drost and Dr. Bill Thatcher-University of Florida). This suggests that stress around estrus causes more deleterious effects than stress seven days past estrus.

Biosecurity or protection of the herd from disease is a necessity. All Recipients should be tested Negative for Neospora and the whole herd should be tested negative for BVD-PI (persistently infected) and Johne's. The herd should be vaccinated for Lepto (including hardjobovis) and fetal protection BVD vaccine in addition to other common vaccinations. Vaccinations should not occur within 30 days of Embryo Implantation.

Although Neospora canis is considered of minimal importance, between 2004-2006 we tested over 5000 heifers (dairy x and beef x bred) and 800 cows and found a 9% rate of infection in the Southeast. Neospora is passed only thru the feces of its intermediate host, the dog, and thru the uterus of the cow. That means that every calf born to a Neospora infected dam will also be infected. The bull calves, although infected, will not be able to pass Neospora on, but each heifer calf will continue to pass it on to every female offspring they have if they do not abort it.

BVD – persistent infection is devastating. Although we found only a 0.3% infection rate among the 5000 (16-18 month old) heifers tested, one positive PI among pregnant cattle between 30 and 150 days of gestation will cause many PI's to be created among those pregnancies. Fetal protection BVD vaccines are now available from Pfizer and Boehringer.

Lepto Harjo-Bovis (serovar borgpetersonii) has become a major player in recipient health. This form of lepto strikes not only with late term abortion, but also with infertility and early embryonic death. State labs report an increasing number of positive cases of harjo-bovis. We've personally suffered great loss from this booger in our own in house recipient herd. Our in-house pregnancy rates went from 57% to 40% and our fetal loss between 35 and 90 days went from 4% to as high as 22% on some groups. The vaccine is expensive but money well spent. Pinkeye is also sometimes seen as a symptom-especially in winter.

Finally, Johne's continues to be a problem. Most infections occur in utero (26%) and in the post natal period (70%), but diagnostic tests are not nearly good enough. Continual testing and removal is the only answer.

In summary, try to have recipients in good condition externally and internally. Remember that comfort is important even to a vow. All the technical knowledge available cannot offset a poor recipient management program.